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Arbor Day.

THIS festival, which originated about a dozen years ago in Nebraska, seems already to have won an established place among American holidays, and some thirty of the States will observe the custom this spring. The very existence of such a celebration is proof of an awakened interest in tree planting; and that it has been made to a certain degree a public-school holiday is encouraging, because this indicates the direction in which such exercises may be made to have a genuine value.

Roadside tree planting is not forestry, nor can it in any way serve the purpose of forest planting or of forest protection. It may be worth while, too, to suggest to some enthusiasts that planting rows of trees by every roadside is not commendable, and that planting the wrong kind of trees in any position, or planting suitable kinds badly, invariably means disappointment and loss. The failure of many plantations along the railroads of some western States, owing to improper selection and worse care, has wrought injury far beyond the mere loss to the companies. It has discouraged others and engendered a belief that all attempts in this direction are hopeless. Nor will the attractive exercises of Arbor Day serve any effective purpose unless the trees are intelligently selected and planted. Distorted and sickly growth or early death of the trees will follow to the disheartenment of all who planted them so joyously and hopefully.

As a people, Americans are not over sentimental. But this sudden awakening to the peril that threatens our forests, may lead to the error of esteeming it something like a crime to lift up an axe against any tree. Mr. Gladstone has said that the greatest obstacle to a sound forest policy in Great Britain was the superstition that invested trees with a certain sacredness, so that felling one was looked upon as sacrilege. We occasionally observe the same feeling manifested here by worthy people who, in their new-born zeal, are led to speak of all lumbermen as enemies of the human race. Of course there can be no system of forestry without tree-cutting, and the protest, to have any value, should be made against wasteful cutting or the stripping of mountains, where the trees serve a higher purpose as a protection to the water courses than they can when made into lumber. It often happens, too, that to secure the highest landscape beauty, trees that are improperly placed need to be removed, and every one who has had charge of public parks has been rebuked for vandalism when it was necessary to sacrifice a tree or a group of trees.

Now, the antidote to any extravagance of this sort is a knowledge of trees and their uses; and the hopeful feature in this Arbor Day celebration is that which makes it essentially a school holiday and connects it with the educational system of the State. It will serve no worthy purpose when the Governor of a great State, as a part of the solemnities, plants White Pines to struggle with the smoke and dust of a city square. But if it can be made an object lesson to the young, as the crowning ceremony of a course of instruction on trees and their needs and uses, it may become an educating influence of serious value. Beyond question, the children of our public schools are entitled to some elementary teaching in regard to the abundant tree growth all about them. It is a scandal that they should grow up in ignorance of the very names of the trees they see every day, and that they should know nothing of their uses or of the laws that control their development. Ability to give instruction in this direction should be required as part of the equipment of every teacher. And if, in addition to the instruction received, the children are led to plant trees with some holiday ceremony, they will be likely to watch their growth with a personal interest and note what helps or hinders it. The beautiful custom of planting memorial trees is one against which even the man who delights to style himself "practical," can offer no objection; and if a child is induced to give closer observation to a tree because it is called by his name, the gain is substantial; for the cultivation of habits of observation and comparison is of itself an education.

Arbor Day will exert a beneficent influence if it does anything to hasten the time when even the children can give an intelligent reason for choosing a particular tree for a given place or purpose, and when they know how to plant it properly, and to give it the care it needs thereafter.

A Dangerous Measure.

A BILL authorizing the Forest Commissioners of this State to lease portions of the forest preserve, not exceeding five acres in extent, and for periods not exceeding five years in length, has already passed the Assembly and awaits the action of the Senate. This bill emanates from the Commissioners, whose duty it is to protect and preserve the State forests, and they recommend and urge its passage. It is a measure fraught with danger to the Adirondack forests, and it ought to be defeated.

The history of this bill, and the reasons which have induced the Commissioners to recommend this remarkable policy, are, as we understand them, briefly these: A large number of persons have, at different times, entered upon the State domain, within what is now the forest preserve, and, without legal authority, have built for themselves summer homes on the land thus occupied. Many of the most beautiful islands in Lake George, and some of the most desirable sites on the Adirondack lakes, are now held in this way by squatters. Among them are men of wealth, and men of social and political influence. These facts make the position of the Commissioners a delicate and difficult one. If they allow the squatters to remain, they lay themselves open to serious charges of malfeasance in the execution of a public trust; if they take steps to have them removed from the State lands they create personal hostility against themselves. They hope, however, by obtaining authority to lease portions of the forest, to legalize this unlawful occupation of State lands, and at the same time

to put themselves in a position to be able to supply eligible building lots for summer homes at low rates.

This should not be allowed. The bill is too general and sweeping in its provisions. It gives too much power to the Commission, and throws too much temptation in their path. The policy of forest management, which its passage would inaugurate, is, we are convinced, a dangerous one. The only reason that justifies the State of New York in holding lands in the Adirondack region, is that the forests which grow upon them may be properly protected and preserved. These forests have an important and controlling influence upon the prosperity of the whole State. If they are to be parceled off into five-acre building lots it will be impossible to carry out any scheme of forest management. Settlers, even when they are rich, and possess social and political influence, are a constant menace to the forest. They increase the danger of fire; they stamp out or clear up the undergrowth, even when they do not destroy or injure the trees, and they are, when they become numerous, a powerful incentive to railroad building.

If a wealthy citizen of this town should ask the privilege of building a summer-home for himself in the Central Park, the proposition would be considered monstrous. The proposition to use the Adirondack forest-park in a similar manner only differs in degree; it is equally monstrous, and might become far more dangerous. There are now comparatively few settlers in the Adirondack forests, but the number is increasing every year, and if the authority to lease land is given to the Commissioners, sooner or later every lake will be lined with settlements and every available site in the forest will have a cottage on it. All the wild and rural charm of the woods will be destroyed, their usefulness as a great popular sanitarium will come to an end, and it will be merely a question of time, when the State forests must be destroyed, or lose their essential value.

There is still territory enough in the Adirondack woods, outside of the State preserve, for a large population, and no hardship will be inflicted in shutting up the public lands from settlement, except in the case of persons who have made expensive improvements on land to which they never had a title, and which now they should be compelled to vacate.

The Commission has doubtless been led to advocate this measure through ignorance of the dangers which its adoption would entail in the end upon the forests. It is not to be believed that they have done so in full knowledge of what a forest really is, and of the requirements of even the crudest system of forest preservation. They have now, however, an opportunity to show their zeal and public spirit. The Adirondack forests are about to be cut up and seriously injured by the building of numerous railroads. The forests, or at least those portions of them which belong to the State, can still be saved from this new danger by a vigorous effort to secure restraining legislation. It is the duty of the Commission to make this effort; its members will find themselves supported in it by public applause and the assistance of the people of this State.

Street Trees.

In no branch of rural economy, perhaps, are Americans so far behind the people of almost every country of Europe, as in the selection, planting and care of street and road-side trees; and this is particularly true in the case of the plantations made in most of our larger cities and their suburbs.

Two mistakes are almost invariably made in undertakings of this character in the United States; the work is done too cheaply, and the trees are badly selected with reference to future effect. Saplings dug from the woods with mutilated roots and branches, are planted in shallow soil, and are then left to struggle unaided against the enemies which beset urban and suburban trees—drought and dust and starvation, gnawing horses and ravaging insects. In the case, for example, of a great public improvement now in progress near one of the principal cities of the United States—an improvement which is dependent entirely upon a growth of stately shade-trees for its value and to which its promoters are fond of alluding as "an American *Champs Elysées*"—it has been seriously proposed to plant trees dragged from a neighboring swamp in strips of earth four feet wide and only one foot deep, resting on a bed of porous gravel. It is needless to say that trees planted in this way could never do more than drag out a brief and miserable existence.

There is no poorer economy than trying to plant street trees cheaply. Unless the work can be done well it had better not be done at all. The ground should be thoroughly prepared, and well-selected nursery-grown trees, carefully pruned for the purpose, should alone be used. The American habit of taking saplings from the woods, cutting off all their branches and half their stem, and then using them as street-trees, cannot be too strongly condemned. The result of such treatment is this. A fork is formed by two or more horizontal branches pushing up from the top of the cut stem. Water gathers and stands in this fork, and gradually carries decay down into the trunk of the tree, destroying it long before it reaches maturity.

Street trees not only should be carefully selected and thoroughly planted, but if anything like a satisfactory result is expected, should be protected from gnawing animals, and judiciously pruned as often as pruning is necessary to keep them in proper shape. The mistake of too close planting is almost invariably made in this country, and trees planted thickly for immediate effect are rarely thinned in time to prevent their injury by overcrowding.

In the matter of selection we make as many mistakes, and almost as serious ones, as in our methods of planting. It is a well established rule, based upon common sense, that trees of one variety only should be planted on one continuous street or avenue. The reason is obvious. If trees of different varieties are used, that uniformity essential in urban planting to the production of harmony of effect will be lost. Trees of different varieties grow differently. Some grow more rapidly than others; some come into leaf and some lose their foliage earlier than others; some, as they approach maturity, assume a stately, and others a graceful aspect; and variety which may make a country road-side beautiful, is entirely out of place in connection with the formal lines of city buildings. This rule is rarely observed in the United States. Trees of one variety are rarely planted here in continuous lines. The pendulous American Elm alternates with the rigid-branched Sugar Maple, or a heavy Horse-Chestnut is seen between two sprawling Silver Maples.

Such combinations of trees are incongruous when planted and age only makes them worse. Roads here and there in New England planted exclusively with the Sugar Maple or with the Elm, or in some of the far Southern States with the Water Oak, serve to show how much more beautiful and effective a street plantation can be made by using one variety of tree, than by any possible combination of different varieties. Or, to cross the Atlantic for examples, the continuous avenues of Planes, of Lindens and of Horse-Chestnuts in Northern Europe, of Sophoras in Italy and of Ailanthus in Paris, clearly teach the same lesson.

Now is the time when plant-orders from all quarters and from all sorts of people are pouring in upon nurserymen. Many of these lists display an ignorance of the first principles of good planting which distresses the expert nurseryman, and the lack of assurance that the plants of even the better lists will be arranged to advantage often troubles his mind still more. For he knows that trees and shrubs, however well chosen, may yet be so unadvisedly planted as to produce no harmonious effect; that they may easily be placed so as never to really satisfy the hopes of their planter,

and never be any credit to their grower, the nurseryman. The owner of a suburban lot or of a country-seat reads the descriptions in a catalogue and writes an order, perhaps for several hundred dollars' worth of plants. Some day the stock arrives, and the owner and his gardener, or perhaps a "landscape gardener" from the nursery, proceed forthwith to planting. The result may be seen in the suburbs of every city and in many country estates. Everywhere are nursery novelties indiscriminately scattered among native wood and shrubbery, or dotted as single specimens all over the lawns. Even as specimens the plants are seldom arranged with good effect. The whole method of procedure is wrong. The fault is not the gardener's, for the most accomplished artist could render small service, if he were called on only after the plants had been delivered on the ground.

The designing of plantations, large or small, calls for the best skill of the real landscape gardener. They should be made to harmonize with the existing natural features of the ground; they should not destroy, but should, if possible, emphasize its natural character. Even for suburban lots, their proper planning requires much knowledge of the nature of plants, much imagination, and much careful preliminary study upon paper. It is safe to say that the nurseryman who secures many orders from professional landscape gardeners, or who persuades his customers to make or get planting-plans in advance, will possess a more comfortable mind and conscience, and will find himself far better advertised by his plants, than his rivals.

Senator Vest's bill providing, among other things, for the extension of the boundaries of Yellowstone Park towards the south and east, is one which should be promptly passed. The enlargement will include the western slope of the Absaroka Range, with the timber land at the sources of the mountain streams flowing into the park, as well as those which flow eastward into the Big Horn. This proposed addition to the park is so rugged in surface that it can never be subdued to agricultural use, and from its geological formation it is safe to pronounce it utterly barren of mineral wealth. But as a part of this great natural reservoir where waters are stored to find their way to both oceans, the forest here is of incalculable value. Not only will these coniferous woods restrain the melting snows of winter, but here, unlike most of the Rocky Mountain region, are summer rains to be husbanded as well. Many of the streams which receive part of their supply from this region can be used for purposes of irrigation, and upon this will depend the success or failure of agriculture for thousands of square miles. This is only one of many areas along the Rocky Mountains which should be set apart as forest-land forever, but from its connection with the Park it is a promising place to begin. There should be little difficulty in passing Senator Vest's bill.

It does not seem as though taste in the arrangement of flowers was at a very high level in this country, when we read the following paragraph, descriptive of a construction that was exhibited in a Western city not long ago: "Upon an easel of Cat-tails a velvet plaque rested. The latter was decorated with a cluster of Roses, and at one side, resting upon a branch of Holly, was a little owl made of Violets and natural enough looking to fly away. Beneath was a nest full of eggs." But reading it quoted with approval under the heading, "Another Pretty Thing," in a late number of a prominent English horticultural journal, we are somewhat consoled by the thought that if our taste is bad, it is no worse than that of the rest of the world.

It is proposed by French horticulturalists to erect a monument over the grave of Lacharme, the famous cultivator of Roses. The Viennese *Illustrirte Garten Zeitung* suggests that lovers of Roses in other countries should contribute towards the monument, and names M. Bernaix, 63 Cours Lafayette, at Villeurbanne-Lyon, in France, as the person to whom remittances may be made.

Landscape Gardening.—VII.

IF, as I have said, we look at any American town where homes of the better class are isolated in their own grounds, we must confess that they do not prove us as far advanced in the art of gardening as we are in certain other arts. Few villa-lots in any neighborhood show that the first requisite of a good effect has been considered—composition. Little regard is usually paid to the harmonious arrangement of contrasting forms, and still less, I may now add, to the harmonious arrangement of contrasting colors.

I do not propose to discuss the intrinsic excellence of that popular kind of gardening which is known as "bedding out," as "ribbon" or "pattern gardening." There are many who would almost invariably prefer to it some more natural disposition of bright-flowered or bright-leaved plants—something more like nature's own floral arrangements or like those of our grandmothers' days. But, given the fact that solid, bright-hued pattern beds may be intrinsically beautiful, how often do we see them used in a way which suggests the desire to make them part and parcel of a beautiful general scheme, and how often is that nice feeling for color which we are so fond of exercising inside our homes displayed in choosing and assorting the plants which compose them? The beds we most often see are ugly in shape, garish in their contrasts of tint, and disposed without due regard to anything around them. A man who would not for worlds hang a chromo on his carefully tinted parlor wall, contentedly puts chromos in Coleus and Geranium in the middle of a lawn the strong green tone of which throws their gaudiness into high relief.

If, now, we look at our larger country-seats and parks we find more palpable evidence of good taste. We have some admirable landscape gardeners in America, and, naturally, they are more often asked to manage large problems than small ones. But as yet they are not asked nearly often enough; and even when asked their counsels are not always respected. They may be allowed to lay out the grounds as they wish, but when once their backs are turned, how quick is the owner to retouch—and spoil—their work! How seldom does he ask himself what it was that his landscape gardener really wanted to do—what was the general effect he wanted to produce,—and then address himself to developing and preserving it! How seldom do we see any place, great or small, of which we can say, There is everything here that the eye desires—there is nothing that it could wish away! How surprised would almost any proprietor be, did we venture to criticise the view from his window upon the same principles that we should apply to a painting on his walls; and yet, unless it will stand such criticism, it is not what he has wished to make it.

Of course, only an experienced and capable artist can arrange any extensive gardening scheme with success. And even the smallest scheme is likely to be more successfully planned and more rapidly perfected under an artist's eye. Yet even if his help is unattainable there is no reason why we should resignedly fall back upon haphazard ways of working. Any man can try to work in an artistic spirit, even if he cannot rival an artist's skill in execution. That is to say, no result made up of various elements—even if those elements be the very fewest in number—can be good which is not good as a whole; to make it good as a whole we must begin by having a clear idea of what sort of a whole we want; and to begin with such an idea is to work in an artistic spirit, no matter how well or poorly we succeed in giving it beautiful expression. The scheme is the main point—the scheme and the will to stick to it and not be tempted by the beauty of individual things into frittering away or confusing its effect.

Is it needful to say that working in this spirit we should not only work to better eventual effect, but with greater pleasure at the moment? To have some appropriate and charming little picture in our minds which we want to realize; to dispose our ground, and to choose and place our plants, with the requirements of this picture before us—

this is to get the highest degree of pleasure from our planting. Nor can it be objected that when the picture is once arranged, then our work and pleasure are over, unless it can be perpetually tampered with and disarranged. To the artist the mutability of nature is often a heavy cross, since he knows that when his result is considered finished he must leave it to others who will permit it (even if they do not aid it) to transform itself into something very different. But to the proprietor or gardener who is trying on a modest scale to emulate the artist, this very mutability insures the permanence of his pleasure. Day by day and year by year he can watch the development of his picture, guard against Nature's disfiguring retouches, welcome her happy accidents, and carefully correct and retouch his result himself while preserving its general integrity. And this work will surely be pleasant, for to the scientific satisfaction of the cultivator will be added that purest of all delights—the consciousness of being a creator in the field of art. *M. G. van Rensselaer.*

Which is the Better Way?

ONE difference between landscape painting and landscape gardening is that the trees and shrubs in the picture of the painter do not grow, while those in the gardener's picture do grow. Hence the former is free to show his group fully grown at once, while the latter must wait for years until his little specimens attain the desired size.

Two methods of planting are practiced. One attempts to produce present effect; the other aims at ultimate results.

Planting material is usually small. This is especially the case where novelties are used. Hence a design of planting, no matter how carefully studied for future effect, may give meagre results at first—the grounds will appear not fully furnished, and the impatience of the owner will compel the landscape gardener to plant greater quantities than one educated to foresee future effects would deem advisable.

On the other hand, if the design is made to produce immediate results, the growth of the planting will in time cause a surfeit, and finally the grounds will appear to be as much overplanted as they would at first seem to be unfinished on the other plan, and with this difference, the overplanted grounds will not improve, but the surfeit will increase. Individual specimens will encroach upon and destroy each other. Here the "survival of the fittest"—that is, the fittest for beauty and interest—will not always occur. The more delicate, and, oftentimes, the more beautiful, will be crowded out by the coarser growing kinds. As a reply to this objection, how many times have I heard it said, "Oh, well, we will 'thin out' as the specimens grow." But the trouble is, the owners of overplanted ground do not "thin out," but everything is left to grow together "until the harvest," and that harvest generally is a rooting out of all and a more judicious planting made to take the place of the old. Sometimes it happens that the harvest is deferred until the harvester appears in the person of a new owner.

I have in mind a case of overplanting which I was called upon to remedy some ten or twelve years ago. The former owner had died, and the property came into the hands of a new proprietor, who, soon after the purchase, sent for help. He said that he felt there was something the matter with the grounds, but he did not know exactly what. I suggested suffocation. "That's it," he replied; "see if you can get rid of it." And thereupon some four hundred trees and shrubs came out at once. In one or two instances it was absolutely necessary to remove more than would have been advisable had more judicious methods of planting prevailed at first. Masses of evergreens entirely filled up spaces where glades and vistas ought to have appeared. These would have been secured if two or three trees only had been originally planted, and even now the removal of a part of these masses would leave the needed opening; but the trees were so thickly grown together, that taking out a part would have exposed dead branches all up the sides of the trees left standing, and therefore the removal of every one was necessary.

From what has been said it appears that both methods of planting have their faults. That by which present effects are secured eventually produces a surfeit, which will not improve as time goes on. The design made to secure future results, at first gives an appearance of bareness, which gradually disappears as the design comes to full development.

In my reference to overplanted grounds, I have stated facts as they ordinarily occur. There are exceptions. Grounds can be and are planted so as to give pleasing results at first, and then are so carefully watched, and so promptly relieved of any undue crowding, that all continues satisfactory. Nevertheless, a long experience has convinced me that with a carefully studied design the most satisfactory results will follow when only those trees and shrubs are used which are intended to remain. The reason is obvious. In the first case the intention of the design becomes indefinite and wavering, as individual members of the overcrowded planting are removed, one after another, to make room for those which are to remain; in the second case, the result is definite, because the intention of the design continues the same. There is no change or fluctuation of purpose. The trees and shrubs when planted were given room for full development, and so to take upon themselves all the beauty and gracefulness of form with which nature has endowed them.

There is one way of securing both present and future effects, and that is the planting of large trees; but this is costly, somewhat doubtful in its results, and it can be of but limited use. *B. S. Olmstead.*

[There are cultural advantages in planting trees and shrubs so closely that they will protect each other when small, and if the plants that are to remain were designated in the original plan and those used for supplementary purposes could be removed at the proper time, close planting would be the best practice. But few men have the strength and persistence of purpose to root out thrifty trees and shrubs as they begin to crowd, especially those which they have planted themselves. Besides this, frequent changes of owners help to defeat the best intentions in this matter. Therefore it is safer, as a rule, to plant only such trees and shrubs as are meant to have a permanent place in a design. It should be added that "novelties" should never be used to produce effects which require time for their development. Who knows how strange plants will thrive in a soil and climate to which they are not accustomed?—Ed.]

Cemeteries.

A CEMETERY is a space set apart from all other uses for the particular purpose of burying the dead and of erecting memorials to them. Its purpose, being so distinctive, should not be confused with that of any sort of public pleasure-ground.

This may seem too obvious to need pointing out, but the fact appears to be that almost every important cemetery becomes noted in a way which shows clearly that its real purpose has become confused with that of displaying what can be accomplished by certain decorative arts. Such a display is out of place and in bad taste. Obviously the rule should be that nothing which is decorative, rare, curious, historical or amusing should be allowed in a cemetery for its own sake, but only as it may aid the true purposes of a burial-ground. Too often, the aim appears to be to afford gratification to those who come to the cemetery in the same frame of mind in which they might be expected to go to a fine public garden; that is, on the alert to admire "Nature's bright productions," "triumphs of horticultural art," and things "rare and curious." They try to ignore the graves as unfortunate and inharmonious objects, but gaze with pride, if they are natives, or with envy if they are from another town, at the largest and most costly monuments, just as they would at a new court-house or triumphal arch. They are attracted as by a show. The cast-iron fences and most of the other

usual accessories, are sufficiently well adapted to aid in the pleasurable impression which the big, showy monuments and the ribbon-gardening make upon this class of visitors.

The custom of making a display of pretty flower-beds is questionable. A cemetery should be built, planned and maintained with sole regard to its prime purpose, and every respect should be shown for the feelings and sentiments of mourners and those who visit the place in a serious and contemplative frame of mind. Not that there should be a prevailing aspect of gloom and sadness, or anything approaching desolation and dreariness; but certainly any appearance of gaity and festivity, and all bright, lively, ephemeral decoration such as might be appropriate to certain kinds of pleasure-gardens, should be carefully avoided.

The best that planting can do for a cemetery is to give an appearance of unity to a necessarily more or less heterogeneous collection of individual monuments; to give as much sense of seclusion to all parts of the grounds as possible; to isolate each monument from its neighbors; and to form a background and frame to each important monument. A certain kind of decorative planting is admissible, on the same principle that picture frames may be decorated. That is, it should be in keeping with and subordinate to the greater work of art which calls it into existence, but it should be used very moderately and with careful discrimination, else it had far better be omitted. Simplicity is the safest rule to follow in most instances.

Brookline, Mass. *J. C. Olmsted.*

A Disease of Certain Japanese Shrubs.

IN regard to Professor Gibbs' very interesting communication, p. 40, I would say that I have noted this disease for a good many years. We call it the Japanese "die-back." The cause thereof I know not, but I have observed that it is aggravated when the plants are grown under unfavorable conditions. As a rule, Japanese trees and shrubs dislike drought in summer or winter, hot sunshine at any time, and exposure to searing winds in winter. I have found that Japanese Maples grown in good loamy, moist ground, well sheltered, and faintly shaded in summer, are very little affected by the "die-back," but when grown in exposed situations and dryish sandy land, they are very subject to it.

Cercis Japonica with us has the tips of its shoots killed back a little every winter, but otherwise it behaves very well. *Exochorda grandiflora* does not seem affected. *Staphylea Colchica* suffers in this way. *Viburnum plicatum* does not show this disease in our garden, but I know of it in New Jersey, where it is not only affected by this disease, but the ends of the shoots get killed back nearly every year as if it were not hardy enough. *Cercidiphyllum* is hardy and healthy with us; so, too, is *Elæagnus longipes*. *Ampelopsis tricuspidata* gets killed back a good deal in winter, but seems to enjoy immunity from the summer "die-back."

But we have other than Japanese shrubs that are affected with summer "die-back." Take, for instance, our native *Hydrangea quercifolia;* it is as bad, or worse, in this respect, than a Japanese Maple. And what can be worse in this way than *Rhus Cotinus?* Even of old and apparently most healthy specimens, half the bush will sometimes die back to the ground in summer, and unaccountably. Deciduous Azaleas likewise die back a deal in summer, but in their case especially I am certain the disease is greatly aggravated by unfavorable conditions of cultivation. *Wm. Falconer.*

Fruit Growing in Florida.

TAKING up the subject of fruit culture in Florida at the point marked by the "semi-centennial freeze" of 1886, it may be said that the Orange, Lemon and other Citrus fruits have held their own, and that the crop of fruit next winter is likely to be four times as large as that which was nipped by the memorable frost.

Before the frost some little interest had been aroused in certain other fruits that had recently been introduced, and during the following year their merits were discussed with eager interest, for public confidence in the Orange had, in fact, been seriously shaken, and the importance of diversification was generally conceded.

The most noted of these new fruits were those odd Chinese Peaches, the Honey and Peen-to, the former with a beak-like point, and the latter drawn in at both ends like a certain style of pin-cushion. The Le Conte and Keiffer Pears were also much talked of, and likewise the Japan Persimmon. On these the Florida nurserymen bestowed much attention in 1886, and still more in the following year, the demand for such stock increasing enormously. There are nearly 100 nurseries named and advertised in Florida, yet the population of the State, including negroes, is only about 400,000. Large orders for young Orange trees were received from California last winter, and tens of thousands were shipped to that State.

In 1886 one of the Japan Plums, which came from California nurseries under the name of Kelsey's Plum, was fruited in Florida from a bud of the previous year. It proved to be remarkably vigorous and precocious, bearing fruit of large size (over two inches in diameter), of fine flavor, with small pits, not subject to curculio—in short, a marvelously fine Plum, in all respects. During the same year some seedlings—perhaps hybrids—of the Chinese Peaches were brought to notice, and nurserymen have made a specialty of them. They are superior to the originals, and the tendency to variation indicates that, by selection, still better varieties may be obtained in the future.

Of the Pears mentioned, the Le Conte has grown steadily in favor. In the country around Tallahassee it was a source of considerable revenue last year, and plans are on foot for establishing an exchange for handling this year's crop. As to the Japan Persimmon, the only question is in regard to its qualities as a marketable fruit. It is hardy, healthy, and precocious in bearing, but, like the Loquat, its status is not fully determined. Both of these trees, as to foliage and fruit, are very ornamental, and are great acquisitions to the orchard, if only for home use. The same may be said of the Guava, which is scarcely less valuable to the people of the southern half of Florida than is the apple in more northern States.

The Grape is another fruit that has acquired prominence since the freeze of 1886. European grape-growers have established extensive vineyards in certain localities and have found some varieties to do remarkably well. Professor E. Dubois makes a specialty of wine-grapes. He is enthusiastic in praise of the Cynthiana and Norton's Virginia, two seedlings of *Vitis æstivalis.*

The Fig, Pomegranate, Mulberry and Olive have long been cultivated in Florida, and deserve more attention than they receive. The Fig grows almost spontaneously. The variety so extensively imported succeeds finely, and, with proper appliances for drying, it ought to be grown profitably for market. In the northern counties considerable attention has been bestowed on the Pecan and the English Walnut, and many plantations of them are growing. The Almonds and foreign Chestnuts may also be grown for home use.

To summarize, the present aspect of fruit-culture in Florida may be stated as follows: On the southern coast Pineapples are grown for market in large quantity, and large plantations of Cocoanuts have been started. Many other West Indian fruits are grown there for home use. Throughout the southern half of the peninsula the Pineapple and Banana fruit well, and the latter is grown for ornament throughout the State. The Mango, Avocado Pear, Sugar Apple, Sapodilla, and some other sub-tropical fruits, succeed well as far north as Tampa Bay, and Guavas nearly to the northern border, but a cold wave like that of 1886 will cut them down. All the fruits previously mentioned do well, except in the southernmost counties.

The fruits shipped out of the State rate in importance about as follows: Oranges, Pineapples, Strawberries, Pears, Peaches, Grapes and Persimmons. The Apricot, Quince and Apple are occasionally met with. The latter promises to succeed best grafted on the Pear. Of Plums, numerous varieties are in cultivation, the Wild Goose and Marianna being the best native varieties, and Kelsey's the best of the Japanese, with numerous others yet to be introduced. Of Peaches, the Peen-to and its seedlings succeed well in sandy lands, and some varieties of the Persian strain where there is clay sub soil.

Taking a brief retrospect, it is evident that horticulture in Florida has made greater advances within the last two years than during any four years in her previous history. Hundreds of thousands of deciduous fruit-trees and vines have been planted. New varieties have been tested. More attention has been given to the science of horticulture. A reform in the system of selling and shipping Oranges and other fruits is in progress. Improved transportation and appliances for refrigeration are being provided. Fruit-growing is steadily increasing in importance, and in most portions of the State it will long continue to be the favorite industry. *A. H. Curtiss.*

Jacksonville, Fla.

New or Little Known Plants.

Yucca filifera.

THIS, the "*Palma*" of the Mexicans of Nuevo Leon, and the largest of the known species of Yucca, is certainly one of the most remarkable and interesting trees of North America. It was first discovered about 1840, near Saltillo in north-eastern Mexico, by Dr. J. Gregg, author of the well known "Commerce of the Prairies." It was next seen in December, 1852, between Parras and Saltillo, by Dr. George Thurber and a party of the United States Boundary Commission, and is referred to, but without characters or description, in Dr. Torrey's "Botany of the Boundary." A figure of the tree, however, appeared in Mr. Bartlett's "Personal Narratives" of the Boundary Surveys, vol. ii., p. 491.

Fig. 13.—Yucca filifera.

This figure very well shows its habit except that the great panicles of flowers are represented upright on the summit of the branches as in other species of Yucca, an error due, no doubt, to the fact that the trees, being at that season of the year out of flower, the artist was obliged to draw upon his imagination so far as the inflorescence was concerned. This mistake led Dr. Engelmann, with only the very insufficient material brought home by Gregg and Thurber at his command, and after him Mr. Baker in England, to consider the plant a southern variety of *Y. baccata*, from which, however, it differs in its much thinner and smoother leaves, smaller flowers, shorter and less fleshy fruit, and pendulous inflorescence. Some time previous to 1860, the collector Roezl rediscovered the tree, and sent seeds to the nurseries of Huber & Co., of Hyères, in France, by whom plants were raised and distributed. One of these flowered in 1876, in the garden of the Baron Prailly, near Hyères, and was figured and described by Chabaud in the *Revue Horticole*, under the not very fortunate name of *Yucca filifera**, by which this tree must now be known.

Yucca filifera is a wide-branching tree often 50 feet in height. The short trunk, 15–20 feet high in fully grown specimens, and not rarely five feet in diameter above the somewhat swollen base, is covered with dark brown scaly bark. The leaves, persistent upon the stout branches for many years, are thin, smooth, narrowly oblanceolate, 18–20 inches long, with fibrous edges, the threads white, or sometimes reddish-brown. The pendulous panicles appear in April and May; they are 4–6 feet long and 18–20 inches wide. The flowers are small, 2–3 inches wide, the ovate, or lance-ovate, narrow segments rarely exceeding an inch in length. The baccate pendulous fruit, often constricted on the side towards the stem, is 2–2½ inches long, with seed often exceeding a line in thickness.

Yucca filifera is a conspicuous object on the arid plains which rise from the Rio Grande to the foothills of the Sierra Madre. The great panicles of white flowers can be seen for miles in the clear atmosphere of that region, and look like gleaming waterfalls pouring out from the ends of the branches. It first appears about 50 miles south of the Rio Grande, where, with the beautiful white-flowered *Cordia Boissieri* in the depression of the plain, it forms an open picturesque forest which extends almost to the valley

* *Yucca filifera*, Chabaud, *Rev. Hort.*, 1876, p. 432, f. 971.—Carrière, *Rev Hort.*, 1879, p. 262.
Y. baccata, var. *australis*, Engelm. *Trans. St. Louis Acad. iii. 45.*—Baker, *Jour. Linn. Soc. xviii, 229.*

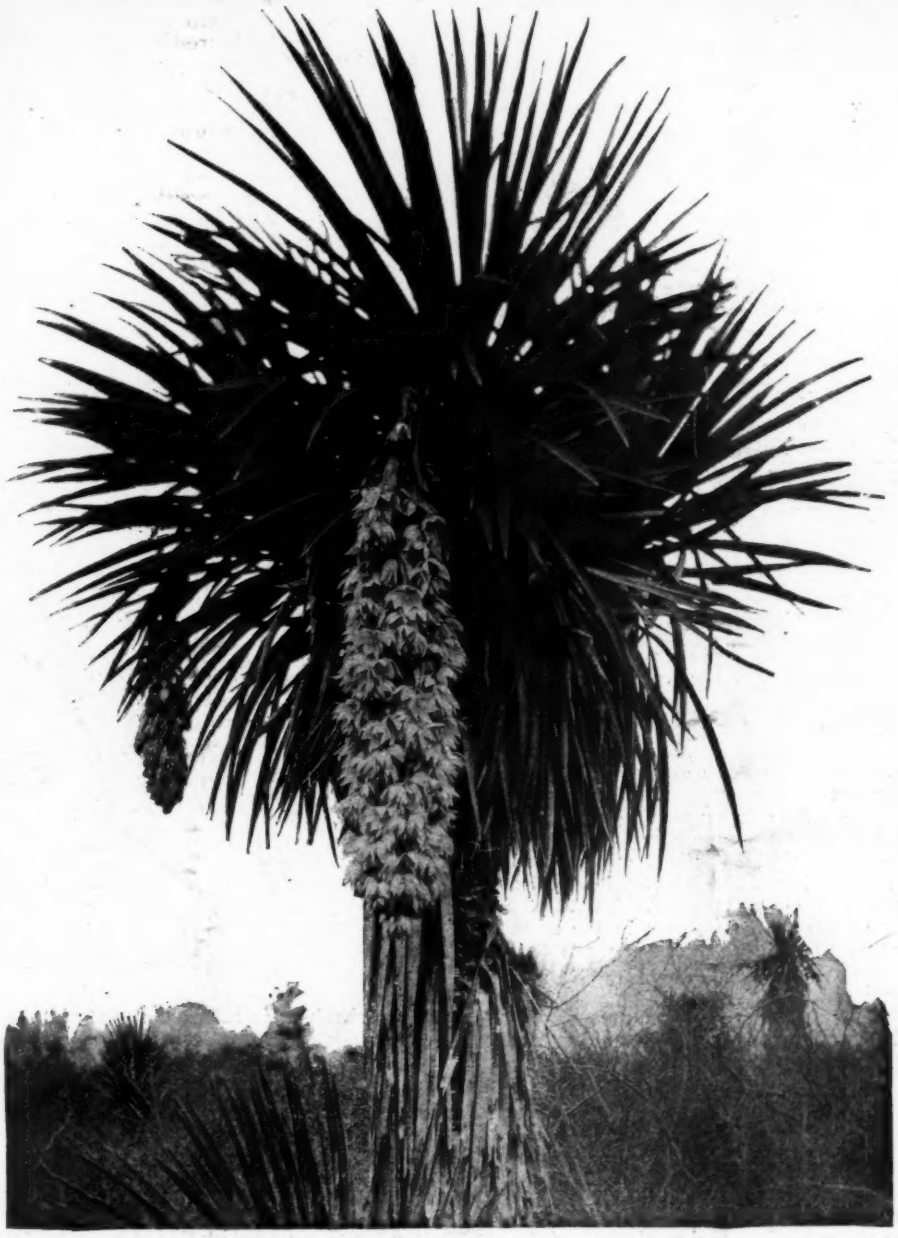

Fig. 14.—Yucca filifera.

of Monterey. The *Palma* is common in the plains between Saltillo and Parras; it was seen by Dr. Parry as far south as San Louis Potosi, and it will be found, no doubt, to extend widely over the high dry plains of north-eastern Mexico.

This tree is often cultivated by the Mexicans at both Monterey and Saltillo, the young plants being used to form high impenetrable hedges about houses and stock-yards; and flowering plants, from Roezl's introduction, are not rare in the gardens of Southern France, Algeria and northern Italy. It is hardy, according to Naudin*, wherever the Orange will thrive. Our illustrations (fig. 13, p. 78, fig. 14, p. 79) are from photographs taken near Monterey by Mr. J. M. Codman. *C. S. S.*

**Manuel de l'Acclimateur*, p. 558.

Chionophila Jamesii.*

In 1821 Dr. Edwin James accompanied as naturalist the government party which, under Capt. Long, ascended the South Platte, skirted the eastern base of the Rocky Mountains as far southward as Colorado Springs, and thence returned east by way of the Arkansas. From Colorado Springs Dr. James made the first ascent of what is now known as Pike's Peak, and there gathered the first collection that had ever been made of the alpine plants of western America. Among them was a single specimen of the plant

*C. Jamesii, Benth. in DC. Prodr. x. 351. A dwarf alpine perennial, glabrous or nearly so, with thickish entire oblong-lanceolate radical leaves; stems scape-like, bearing one or two pairs of narrowly linear leaves and a close secund imbricately bracted spike; calyx broadly funnelform, with five short blunt teeth; corolla cream-color, tubular, half an inch long, with short bilabiate limb and bearded in the throat; sterile filament glabrous.

which is here figured. This, with others, was referred to Dr. Torrey for determination, but unfortunately it became mixed with specimens of *Pentstemon Jamesii* and so was overlooked, and eventually found its way to the herbarium at Kew. Here, twenty-five years later, it was detected by Mr. Bentham while he was preparing the *Scrophulariaceæ* for DeCandolle's Prodromus, its peculiarities were recognized, and it was described as a new genus. Fifteen years later still, in 1861, Dr. C. C. Parry ascended the cluster of now well-known peaks which were named by him Torrey, Gray and Engelmann, and upon the summit of Gray's Peak he rediscovered James's plant. Since that time it has been found in the same region by several collectors, but it yet remains the sole representative of the genus.

As shown by the figure, the leaves are mostly in a basal cluster, with one or two pairs of linear ones upon the low scape-like stems. The cream-colored flowers are in one-sided bracted spikes, the two-lipped corollas bearded in the throat and not greatly exceeding the calyx. The genus is closely related to *Pentstemon*, from which it is distinguished chiefly by the tubular and short-toothed calyx and by the spicate arrangement of the flowers. This inhabitant of our highest snow-clad peaks cannot be said to be remarkable for its beauty, but as a rarity and as the only one of its kind it deserves a place in every collection of Alpine plants.

S. W.

Fig. 15.—Chionophila Jamesii.

Cultural Department.

Pruning Shrubs.

TO the repeated inquiry as to the best time and method of pruning deciduous shrubs, it may be answered that no single rule can be laid down that will apply to all cases. Shrubs, like trees, are pruned for different purposes, and what is good practice in one case may be ruinous in another. A tree for the lawn requires different treatment from a street tree, and the rule for pruning an apple tree to induce an abundant yield of the best fruit would not apply to another tree where timber or fuel was desired. In the same way the pruning of a shrub may be good or bad according to the object chiefly desired. What is the best practice when the production of flowers is the main consideration may be far from good practice when the symmetry or grace of the shrub itself is the leading purpose.

There is little doubt as to what is the worst method of pruning, and that is, shearing off the shrubs of a border, at a uniform height, as squarely as a hedge is trimmed, and cutting back single specimens with absolute evenness all around till the plant assumes the shape of an egg or a perfect sphere. The only parallel to atrocities of this kind is seen in the work of professional tree-butchers who go about the streets of towns and cities amputating all the branches of the street trees and leaving nothing but forked posts. And yet in many cemeteries and private grounds in city suburbs shrubs are mutilated in exactly this fashion by men pretending to be professional gardeners. Of course all the beauty and grace of the plants are destroyed.

And how about the flowers? A large percentage of flowering shrubs bloom in the spring, and most of these form their blossom-buds on the small branches that were made the year before. In each bud is a flower safely protected from the winter weather and ready to open with the warmth of the coming year. These are the branches lopped off by the shears in autumn or early spring, and with them are sacrificed the buds and promised flowers. If the pruning is delayed after the shrubs have bloomed they will make an effort to repair the loss by throwing out new shoots, which will ripen and bear abundant flowers the next year. In the case of shrubs like the Althæa, the Great Panicled Hydrangea, and some species of the Tamarisk, which bloom in the fall on wood grown the same year, a hard cutting back between late autumn and early spring will destroy no flower buds, but will encourage a strong growth of flowering wood for the next autumn.

But shrubs, as a rule, are in flower but a short time comparatively, and it is rarely advisable to adopt a treatment which has in view this brief season only. Even in winter a mass of shrubbery has a beauty of its own. Every thicket is enveloped with a nimbus of delicate tints, violet, rose, soft gray and faint olive, which comes from the combined colors of the twigs. This is true not only of those shrubs which have bright colored bark like the crimson of some Dogwoods and the yellow of the Willows. Many others whose single shoots show no striking color on close inspection are surrounded by this halo when they are massed so that the faint tints of each twig are all gathered and fused together. At all events, a mass of this kind is more beautiful than a row of Althæas cut back to bare poles. And in the season of foliage a severely pruned shrub is deprived of that flowing grace of outline which is one of its principal charms.

For general purposes, therefore, shrubs should never be cut back so far as to impair their vigor; nor should they be pruned so as to destroy their natural outlines. They should rather have the weak shoots thinned out and be cut back cautiously so as to develop their best form.

Shrubs like Thunberg's Spiræa, which bloom early on wood of the previous year, should not be pruned in autumn or early spring where it is desired to secure abundant flowers, but immediately after the blooming season.

Shrubs that bloom late on wood of the current year should be pruned after the leaves fall in autumn or in early spring before they start.

S. A.

The Cultivation of Lilies.

WHAT soils do Lilies require, or in what kind do they best succeed? are questions often asked; and a fitting answer is, that it makes but little difference. The character of the soil is of less importance than its condition. I have planted Lilies in soils varying from the heaviest clay to the lightest sand, and have had perfect success in all. My preference is a light loam, moderately moist and rich, and in partial shade. If that is not at command, I plant in such as I have, with full confidence that a soil which will yield a good crop of garden vegetables will produce Lilies.

It is a mistake to suppose that each plant needs a soil with certain specific characters for its perfect development. It is safe to say of Lilies, at least, that all the species will thrive in the same soil. Make a heavy soil rich and provide good drainage, and you will get an abundance of Lilies. Make a light soil rich and keep it moist by a liberal mulch, and the result will be the same.

A common cause of failure in Lily-culture is planting in wet situations. Too much water around the bulbs in winter is about as injurious as too many degrees of frost. While the Lily prefers a moist and cool situation, it will not thrive where the soil is covered with water during winter.

There are many gardens noted for productiveness which cannot be planted until long after neighboring ones because of too much moisture; such are not suited to the Lily. The remedy in such a case is a raised bed, which may be prepared by marking out a bed of a required size and digging the earth deep. Then on the surface place stones, of about the size used for paving, some ten inches apart each way. Fill the spaces between the stones with soil level with the tops. Upon this place the bulbs, and between them put smaller stones; then cover the bulbs to the depth of six inches with good rich soil. The bulbs should not be placed nearer than one foot from the edge of the bed, which edge should be nicely sodded and kept neatly trimmed during summer. Upon the approach of frost, mulch a little more heavily than if the bulbs were planted in the ordinary border.

With these precautions, nearly all Lilies can be grown in the greatest perfection.

For the perfect development of the flower, a few other precautions are necessary. The first is to cover the bed during summer with some neat mulch, in order to keep the ground cool and moist; this is not only necessary for the full development of the flower, but for the growth of the bulb, and the flowers the coming season will be numerous and strong just in proportion to the size and strength of the bulb formed this year. For mulching, some low-growing annuals should be used, such as Verbenas, dwarf Petunias, or any other that fancy may suggest. This applies only to Lilies in a raised bed; when they are planted in the shrubbery-border, an excellent place for them, this precaution is not necessary.

The second precaution is, to have the Lily-bed partially shaded, to protect the plants from the mid-day sun. This may be done by a light lattice-covering, say three or four feet above the plant; or by arranging a frame with a light canvas covering, to be used only in excessively hot weather. This will not only prolong the season of flowering, but the flowers will be larger, the colors and markings better defined, and the whole plant stronger and more healthy. Of course, good flowers can be produced without these precautions, but better ones can be produced with them.

When to plant is an important consideration. It is well known that the best time to remove plants, and particularly bulbs, is during their period of rest. The Lily has but a short season of rest; it is constantly doing something in the way of development, but its energies are only employed in one direction at one time. The growth of stem and flower consumes the bulb, which, in its turn, is built up by the action of leaf and stem. It is better to transplant as soon as possible after the bulb has perfected its growth. If taken up at this time the bulbs can be packed away in leaf-mold until spring, if necessary. It is far better to take up, separate the bulbs and plant out the same day. Bulbs should remain dry but for a very short period. In importing new varieties and for purposes of sale, it becomes necessary to keep them dry longer than they should be. Every day they are exposed to the air materially weakens them, and often beyond their power of recuperation. No wonder growers get discouraged in their efforts to exhibit a Lily-bed, when they buy bulbs that have been in dry sawdust, or exposed to the dry atmosphere of the seed-room, from October until May. Such bulbs will not recover their strength, if ever, until long after the hopes of the buyer have been blasted, and he has bestowed his blighted affections on some other plant.

When Lilies have become established frequent removals are not desirable; they should remain undisturbed as long as they flower well. It is well to remove the small bulbs that form at the base of the stem in early spring, and transfer them to the reserve ground to complete their growth and be ready for future use.

C. L. Allen.

Seedling Rhododendrons.

I THINK we ought to encourage the raising and planting of seedling Rhododendrons more than we do. By raising them from seeds saved from the hardiest varieties already in cultivation we may reasonably expect a majority of the seedlings to prove hardy. And I have no doubt in point of vigor and health the seedlings have the advantage over the grafted plants. But in the production of flowers I am inclined to think that the grafted plants will bear more than will the seedlings, because, being less vigorous, they are more branchy in proportion to their size, and every little shoot among Rhododendrons should carry a bunch of flowers.

Four years ago last fall we planted a hundred seedlings in one bed. They were then some 20 to 24 inches high, and well set with buds. In spring they bloomed as if nothing had happened, and have ever since grown and flowered most satisfactorily; and all are still alive and in excellent health. Now, the most striking feature about these seedlings is their vigor. They have outgrown a lot of grafted plants that occupy the same bed with them and which are considerably older than the seedlings, and there is more suppleness in their wood and freshness in their foliage than the grafted specimens show. The flowers of all are beautiful—indeed, many of them are as good as those of some of our named sorts. But while these seedlings, so far, have proved hardy here, in less favored localities, no doubt, all of them would not prove hardy. But surely we can raise seedlings that will prove hardy generally from Everestianum, Album elegans, Abraham Lincoln, and other hardy kinds.

We mulch this seedling bed with oak-tree leaves; throw them in loosely among the bushes in fall, and about 12 to 18 inches thick, and leave them there winter and summer. The frost never penetrates through this mulching; nevertheless, although the soil about the roots never freezes, and the tops may shiver and droop in zero weather, I never have known the plants to be injuriously affected by these apparently inconsistent conditions.

W. Falconer.

[The disadvantages of planting seedling rather than named, tried varieties of Rhododendrons, are that more or less of the seedlings prove too tender for our climate, and that many of them produce inferior flowers. For most people, especially for those who only need a few plants, the named varieties will be found the most satisfactory. Layered, and not grafted, plants should be used whenever they can be obtained. They grow better, and are not troubled with the suckers, which spring up from the stock of grafted plants.—Ed.]

Chrysanthemum Notes.—Chrysanthemums from this time will be much better without any fire-heat. There is no better place for them than a cold-frame sunk a foot below the ground level. They should not be set close together—a space of at least an inch between each pot should be allowed. It is not that the plants themselves would crowd each other when closely packed, but each pot will be found to have the roots strong and vigorous around the outside of each ball of earth. They should be covered every night with something more than ordinary glass sash, for at least a month to come, and I know of nothing better than the cloth made by the United States Waterproof Fibre Company. I have frames made to fit sashes six by three feet, covered with the cloth and put on every night, and it is astonishing how much frost they keep out. All plants as they become well rooted should be repotted before becoming pot-bound. The black aphis should be kept well in check. I use, first, wherever practicable, fumigation with tobacco, once every week; then I dust the plants over head with pure tobacco dust. I have found plants injured when using tobacco snuff. Finally I syringe with tobacco-water, made strong enough to have the appearance of black coffee. The white mildew must be fought with sulphur. I mix equal parts of sulphur and very fine flue-dust from hard coal. With this I thoroughly sprinkle the plant above and below and leave the dust on for a couple of days. If at any time it is not possible to repot plants when they become pot-bound, give an occasional watering of liquid manure to keep up the food supply. Do not neglect to keep plants staked as they grow.

John Thorpe.

Acacia pubescens.—This plant was introduced into cultivation a century ago by Sir Joseph Banks, but no one has ever tired of the beauty of a fine specimen when in bloom. Coming from the extra-tropical regions of Southern Australia, it can be kept in a cool house where the temperature does not fall below 40°, and it requires the simplest treatment. It comes into bloom in February and continues to flower from four to six weeks. Although the flowers when cut wither in a few hours, a well grown specimen in bloom is singularly beautiful. I lately saw one that had grown up with a single stem and then spread out into the form of a tree some ten feet high, with broad top and drooping branches. Every twig was thickly hung with pendulous racemes of canary yellow flowers, which showed at their best against the delicate foliage, and made a sight to be remembered long. *S. A.*

Hardy Rhododendrons.—Let me add to the list of hardy Rhododendrons given in Garden and Forest of March 14th the names of the following, which come through the winters of this latitude in perfect safety:

Chancellor, dark purplish crimson; Cyanum, bluish white; Gloriosum, creamy white; Michael Waterer, crimson spotted; Minnie, bluish white; Perspicuum, clear white; Pictum, clear white, spotted; Queen, cream, edged with pink, and Oculatum, light pink. *Joseph Meehan.*

Germantown, Pa.

The Forest.

Tree Planting in California.

THE following is part of an address delivered before the American Horticultural Society at its late meeting, at Riverside, California, by Mr. Robert Douglas:

The Legislature of the State of California has granted an appropriation for the establishment of experimental stations for testing fruit, ornamental and forest trees. And its citizens generally seem to be awake to the necessity of planting forest trees.

This experimental work cannot be commenced too soon, for while individual enterprise has been employed in thoroughly experimenting with every kind of fruit to an extent which is simply wonderful, the noble indigenous trees of the State have been sadly neglected. Indeed, with the exception of a few stately specimens in the Capitol grounds at Sacramento, we rarely find a specimen except the Monterey Cyprus (*Cupressus macrocarpa*) and Monterey Pine (*Pinus insignis*) planted everywhere, while specimens of *Sequoia gigantea, S. sempervirens, Cupressus Lawsoniana, C. Goveniana, Thuya gigantea, Libocedrus decurrens, Pseudotsuga Douglasii, Picea Sitchensis, Abies concolor*, and other noble Silver Firs and Pines are rarely met with.

Forestry is a subject of great importance to this State, and the time will soon arrive when it cannot longer be neglected. The conditions here differ so materially from those of the Atlantic slope that our experience there will not avail us to any great extent here. Forestry here must be confined mainly to desert and hilly lands that cannot be irrigated.

A transient visitor from the East, looking from the window of a sleeping-car, would see a very discouraging prospect. The desert is certainly not promising to him, and the hills look little better. The word, desert, is not well understood. Many agriculturists and horticulturists in Kansas and Nebraska claim that they have brought their land from a desert to rich fertile land within two or three decades. They tell you that their States are a part of the "Great American Desert," and refer you to a school-geography to prove what they say, but they do not seem to notice the fact that in this same school-book there are woodcuts of Indians chasing immense herds of buffaloes, wading through very tall grass.

When the emigration of 1849 went through the Territory of which Kansas and Nebraska is now a part—and that was before there was a white settler in the territory—the land lying between the Missouri River and the Rocky Mountains was called the Plains. The desert of the "Forty-niners" lay between the sink of the Humboldt and the Sierra Nevada Mountains. And many years before that time the Santa Fé traders crossed the Plains from Leavenworth to Santa Fé.

The settlers in Kansas and Nebraska claim that they can grow cultivated crops where they could not be grown twenty-five years ago. This is undoubtedly true and can be readily accounted for.

Before the whites settled west of the Missouri River the land through central Kansas and Nebraska was covered with Buffalo Grass, which kept the rains from penetrating the ground almost as effectually as would a shingle roof. I have thrust my cane into the ground a few minutes after it has been flooded with rain, and found it as dry as dust two inches from the surface. The rain ran off in torrents into the ravines and "draws" without having a perceptible effect except on the surface. You might see the plains covered with water, looking like a lake with many islands, and within two hours from that time scarcely a sign that there had been any rain at all. Since that time millions of acres have been plowed in Kansas and Nebraska, and, aside from this, 147,000 acres have been planted with forest trees in Kansas, besides a large number planted last year; and a great many more have been planted in Nebraska than in Kansas.

Now, when we consider that an inch of rain is equal to one hundred tons of water per acre, and multiply the millions of acres of plowed land by the number of inches or hundreds of tons that have been absorbed in the plowing, which formerly ran off, we can see that the settlers have materially changed the condition of the plains.

While your desert lands look very unpromising to the tourist, even when compared with the plains, the close observer will see many things, aside from climate, in your favor.

Any one studying these deserts carefully will see that, lying neglected, they must be gradually growing drier and drier. This is plainly to be seen. We see that where deep lakes once overflowed no water stands now. Where monstrous trees once grew, as shown in the petrified forests, only pigmies in comparison grow now. We see that the channels of the streams are gradually being cut deeper, which, of course, drains the country more rapidly.

Although I have not had the opportunities for studying tree-growth on this side of the continent that I have had on the other side, I have yet seen some very encouraging signs. I have seen changes recently in parts of the country I went over in 1849 that are well worth noting and give great promise, even on what were then desert lands pure and simple. On the other hand, I have carefully observed, especially in one or two cases, that among millions of trees covering miles on the side of a desert, I could not find a single tree less than fifty or seventy-five years old, although these trees are covered with seeds and there are no indications of a fire ever having visited them. This is proof, to my mind, that the climate is drier, as seeds cannot germinate now where they produced seedlings less than a century ago.

Any one who has studied these desert lands, even when on a flying trip, will see enough to convince him that if irrigation could be secured there would be very little desert land in this State. I firmly believe that on any desert land where Sage Brush and other shrubs are growing even sparsely, forest trees will grow if the land is cleared and well plowed, which is a very cheap and simple affair compared either with clearing grub-land, timber-land, or breaking prairie in the Eastern States.

The forest trees must be planted during the rainy season, and cultivated at least during the succeeding season. It is surprising to see how the land in this State endures drought when compared with similar land on the other side of the continent. I have seen our gravelly land in Illinois without apparent moisture at three feet in depth after a drought of only six weeks. I have noticed men digging only two feet deep for telephone poles in this State and the moisture was perceptible, although there had been no rain for nearly six months.

This is not a solitary case, but it is usual, as I have frequently noticed in new railroad-cuts. In the East a hard-pan lies at a certain depth from the surface, through which the moisture cannot be brought up by capillary attraction. In this State the soil generally is loose and porous down to the bed-rock, however deep that may be, consequently all the deciduous fruits may be grown without irrigation, but they must be thoroughly cultivated to get the best results.

All through the San Gabriel Valley, and in other parts of the State that I have visited, the indigenous trees thrive best on the north sides of the hills—indeed, the hills are generally destitute of tree-growth on their southern sides, bearing only shrubs, perennial and annual plants, and a scanty growth at that. Yet I have seen Eucalyptus growing, when planted, on the very summits of some of these hills, and on their southern slopes. In very many of these hills the soil is rich enough for tree-growth, even to the very summit—indeed, I do not remember an exception, unless in cases where the rock protruded.

It becomes me to touch the subject of irrigation with modesty, for I received a severe rebuke for the first opinion I ventured to express. A gentleman was irrigating a fine Araucaria; he had the earth scraped away from the collar of the tree, forming

a basin about three feet in diameter and six inches deep; he was flooding this with cold water in the heat of the day, and threw the water with such force from the hose that the crown of the roots was laid bare. I told him I thought he ought not to disturb the surface so near the trunk of the tree, as the feeding roots lay at some distance. He replied that the Mexicans had irrigated for a hundred years, and he guessed they knew more about it than a new-comer. I pocketed the affront, and asked him how long he had lived in the State; he said, over two years. Then I wondered he had not called me a "tenderfoot."

No doubt a great deal has been learned from the Mexicans, yet I think our people can soon make improvements on what they learn from them. The more I observe and study this desert question, the more I become convinced that progress will be made in this direction much more rapidly than the most sanguine can imagine. Scientific men may attempt to prove to you that according to natural laws the thing is impossible. Less than fifty years ago they said, and wrote, that valuable trees could not be grown on the Illinois prairies, until many generations of Willows and Poplars were grown to fit the land for the more valuable kinds; and at that time it was the general belief of prairie farmers, that trees and the "tame grasses" would never succeed on prairie lands. Now we know, and have long known, that our prairies grow every kind of tree and grass that will bear the severity of our climate.

You will make much more rapid advances than we made in the Mississippi valley. Our settlers came in covered wagons, yours come on express-trains; you have improved labor-saving machinery, which was not then invented; and last, but not least, you have a stable currency, and are not left to the mercy of wild-cat banks.

Reservoirs will be built to husband the waters that are now running down the rivers into the ocean, artesian wells will be used in many places, thousands of acres of forests will be planted that will not grow as rapidly as if irrigated, but after they are planted and cultivated, the earth will absorb a great quantity of water that formerly ran off. The trees will shade the ground, which will gain in both moisture and fertility, as they will draw nutriment from an immense depth while our forests draw their nutriment from nearer the surface. The eastern farmer and horticulturist has at best only seven or eight months in the year, and from this must provide enough to support his family, and secure fuel and feed for his stock; aside from this his land is decreasing in fertility, or kept fertile at great expense and labor, while yours will, for a long time, be increasing in fertility, if kept well cultivated and worked deep.

It will require more experience than any of us have had, to decide which will be the most suitable trees for forest planting. Many of the most profitable for Eastern planting would not succeed well here. The soft foliage of the White Pine and Larch would unfit them for this climate, and the tendency to run their roots near the surface of the ground would be to their disadvantage. For desert planting, trees must be used that can be grown cheaply from seeds, so as to come within the means of the new settlers. This would seem to be a necessity. I would place the *Eucalyptus globulus* at the head, as I have seen it growing in what would seem almost impossible places. It would make fuel cheaper than any other tree that could be grown on like lands.

The common locust, *Robinia Pseudacacia*, I have seen growing well in western Kansas and Nebraska, New Mexico, Colorado, Utah, Nevada, and at several places in this State, in every case making a good growth without irrigation; and in all these cases I have failed to find traces of the borer, so fatal to this tree in the Eastern States. Would space admit I might name other trees I should deem promising. These two, however, would furnish fuel and durable posts for the new settler, are grown very cheaply from the seed, and transplant well. For general forest planting there are two valuable trees that stand out in bold relief. In this case there can be no mistake, for nature has succeeded in growing them almost everywhere between the eastern bases of the Rocky Mountains and the Pacific coast, and man has used them more generally than any other trees over the whole western half of the continent. These are the Yellow Pine, *Pinus ponderosa*, and the Douglas Spruce, *Pseudotsuga Douglasii*. The former ranges all through the mountains from British Columbia down into Mexico, through Arizona and New Mexico to western Texas, growing on dry mountain-sides through Colorado and Montana. It forms over ninety per cent. of all the timber in the Black Hills of Dakota, reaches further out on the plains than any other tree in Colorado, and is the only Pacific coast tree that runs east into Nebraska.

Next to the Douglas Spruce it is the most generally distributed and valuable tree of the Pacific forests. The Douglas Spruce ranges through British Columbia, Oregon, Washington Territory, all through the Sierra Nevada, the San Bernardino Mountains, Arizona, New Mexico and on high dry ridges in Colorado, through the Uinta and Wasatch Mountains and in Wyoming and Montana. It is called Yellow or Red Fir by lumbermen, is the most generally distributed, and said to be the most valuable timber tree on the Pacific coast.

This tree grows on high dry ridges in Colorado, Arizona and Montana, which proves it to be, like the Pine, a suitable tree for planting on dry lands. Like the Pine, it is a rapid grower and reaches the largest size. These two trees furnish nearly all the merchantable lumber, except redwood, from the coast to the eastern base of the Rocky Mountains.

The *Sequoia sempervirens*, Redwood, is a valuable tree, but only adapted to certain localities. It has a very circumscribed range, only reaching from about the northern line of the State to the southern boundary of Monterey County, and in a narrow belt along the coast. But experiments may prove that this valuable tree will succeed far from its present locality. I noticed a fine specimen in Pasadena, eight years planted and over twenty feet high. *Pinus insignis*, although its timber is of no great value, may be named as having a very limited range—only found in a sandy spot at a single point on the coast; yet we see it growing well wherever planted. We may hope from this fact that other trees of limited range and more value may have their limits extended under cultivation.

Correspondence.

To the Editor of Garden and Forest:

Sir.—A few years since I met with, in its wild state, a white-flowering specimen (is it a variety?) of *Phlox divaricata*, which was transferred to my wild garden, where it now flourishes. I have been surprised at the remarkable beauty of the plant. As is well known, this species, at least in its wild state, is of a loosely spreading habit, and rather chary of its stems and leaves, whereas the plant referred to forms a luxuriant and well-rounded head, being generous in stems, leaves and branches. The foliage, too, it may be remarked, is of a distinctly lighter shade of green, readily distinguishing it from the usual form. From the middle or latter part of April until after the middle of May it is covered with a snow-white bloom, making it altogether a plant of striking appearance. As neither Gray nor Wood, in their popular Botanies, make mention of a white variety, and having seen no reference anywhere to white-flowering specimens, I am desirous of knowing whether they are of rare occurrence; and if not, why has so little attention been given by cultivators to so ornamental a plant?

Fairview, W. Va., March 20th, 1888. *W. E. Hill.*

[The white form of this flower is not unknown in cultivation. It is contained in Woolson's Catalogue this year. Mr. Woolson writes that it has proved unsatisfactory with him on account of its straggling growth. Mr. F. D. Hatfield, of Wellesley, Massachusetts, considers it a good plant for rock-work or the front of a border. Of course single plants make little show, and it should be grown in masses. From our correspondent's description it is not impossible that he has chanced upon a variety of this Phlox which has special merits.—Ed.]

To the Editor of Garden and Forest:

Sir.—I was glad to see the recent article in your paper about Sweet Peas. There are no flowers I love better and none which have given me more trouble; and I venture to ask, therefore, whether you will not now kindly give a little advice with regard to the best methods of planting and treating them in this part of the world.

Leesburg, Va. *Dilettante.*

[Any fairly good garden soil will give an abundant yield of these flowers if the seed is only planted early enough. This means just as soon as the ground can be worked in spring, a period which comes some weeks earlier in Virginia than in New York. No injury will come from frosts or even ice. Then plant deeply and plant thinly. Have the soil worked to the depth of eighteen inches or two feet, and drop the Peas in a furrow five or six inches deep. Cover at first with about three inches of soil, and, as the plants grow, draw earth up to them until the bed is level. The roots of Peas like a cool place to grow in. Then, if

every flower is cut every day, and no seed allowed to form, the same plants, with good tall brush to run over, will produce flowers until frost. There will be no need of another sowing for succession.—Ed.]

Recent Publications.

Winter: From the Journal of Henry D. Thoreau; edited by H. G. O. Blake. Houghton, Mifflin & Co., Boston, 1888.

Thoreau left behind him at his death a very voluminous journal in which he had noted down from day to day the sights which had met his eyes in the woods and fields of Concord, and the thoughts which they excited in his mind. On one page of this journal he said that it might be well to write "a book of the seasons;" but as he never accomplished this task it was wisely thought that another hand should compile such a volume from the notes which he had jotted down, perhaps in half-conscious preparation for it. Several years ago "Early Spring in Massachusetts: From the Journal of Henry D. Thoreau," was accordingly issued by Mr. H. G. O. Blake; "Summer" followed in 1884, and just now we have been given "Winter" in a similar form.

More delightful books than these it would be hard for the lover of nature to find. Thoreau was not merely one of the keenest and most patient, but one of the most poetic of observers; his poetic instincts were of that philosophizing kind which bring the inmost soul and needs of man into perpetual relation with external things; and his style is almost unsurpassed for clearness, simplicity, individuality and charm. Whatever he saw, he saw with the soul as well as with the eyes; and he saw everything—from the broadest or most fleeting landscape effects to the most tender beauties of the humblest insect, animal or flower. His feeling for beauty was as intense as his delight in the facts of animal and vegetable existence. If he never speaks like a scientific botanist, he always speaks like an accurate observer, yet always, as has been said, like a poet, too. And when he paints for us what he sees, it is in words which sound like the thoughts of an artist translated from paint into language, with a skill of which he almost alone, among writers of English, has found the secret. There is no artifice, and not even any conscious art, in his manner of writing. What we have in these books are simply notes jotted down at the moment, often out-of-doors, and always for his own eye only. Yet take such a passage as this, for example, and try to match it from the pages of any other writer: "Each little blue curl calyx"—he is speaking of a little aster sheathed in ice—"has a spherical button, like those over a little boy's jacket, little sprigs of them; and the pennyroyal has still smaller spheres more regularly arranged about its stem, chandelier-wise, and still smells through the ice. The finest grasses support the most wonderful burdens of ice and most bunched on their minute threads. These weeds are spread and arched over into the snow again, countless little arches a few inches high, each cased in ice, which you break with a tinkling crash at each step. The scarlet fruit of the cockspur lichen, seen glowing through the more opaque whitish or snowy crust of the stump, is, on close inspection, the richest sight of all, for the scarlet is increased and multiplied by reflection through the bubbles and hemispherical surfaces of the crust, as if it covered some vermilion grain thickly strewn. The brown cup lichens stand in their midst. The whole rouch bark, too, is encased." This for a microscopic picture; and this for a broad landscape effect: "A beautiful, clear, not very cold day. The shadows on the snow are indigo blue. The pines look very dark. The white-oak leaves are a cinnamon color, the black and red oak leaves a reddish-brown or leather color. A partridge rises from the alders and skims across the river at its widest part, just before me; a fine sight. How glorious the perfect stillness and peace of the winter landscape." To quote from the more human, more philosophical parts of this volume—parts which recall the writings of Emerson in a way which does but accent their own individuality—would be out of place just here. But intermingled as these are with his manifold, exquisite pictures of plant life and of landscape beauty, they do much to make up the charm of Thoreau's most charming book.

In the *Popular Science Monthly* for April will be found a chapter on "The Earliest Plants," extracted from Sir William Dawson's recently published "Geological History of Plants," and further back in the thirty-second volume of the monthly—of which the April number forms the concluding pages—is a discursive article by Grant Allen on "American Cinquefoils," and one on "Our Forestry Problem" by Mr. B. E. Fernow, Chief of the Forestry Division of the Department of Agriculture.

Retail Flower Markets.

New York, *April 6th.*

The trade in plants and cut flowers was very large at Easter. Prices held at a reasonable figure, only selected Hybrid Roses and "Longiflorum" Lilies being somewhat higher, and these only in certain localities. This week there is a glut of cut flowers, and prices are low. The choicest specimens of Hybrid Roses with stems half a yard long, sell for 75 cts. each. Madame Gabriel Luizet Roses are inferior in quality and cost $6 and $7 a dozen. Prime Puritans bring $9 a dozen. Extra fine La France Roses sell for 40 cts. each, and those not so large for $2 and $4 a dozen. Ulrich Brünner is exceptionally handsome and costs $6 a dozen. Selected Jacqueminots are $6 a dozen, but the majority sell for half that price. The best Catherine Mermets bring $2 a dozen, and Brides can be had for the same money. Perles des Jardins of excellent quality cost $1 a dozen, as do selected Niphetos. Mignonette is abundant, a bunch of a dozen spikes costing 50 cts. The Giant variety brings 15 cts. a spike. Lilac holds firm at 50 cts. a spray of two tassels. Violets are of good quality, the Marie Louise bringing $1.50 a 100 and the single Russian 75 cts. Gardenias cost 25 cts. each. *Narcissus Poeticus* is $1 a dozen. Daffodils, Lilies of the Valley and Tulips bring from 75 cts. to $1 a dozen. *Lilium longiflorum* is much preferred to *L. Harrisii*, and brings 40 and 50 cts. a flower where the latter are sold for 30 and 35 cts. Callas bring 25 cts. each. Cyclamen plants averaging twelve flowers are offered for 75 cts. A number of Easter weddings in prospect will keep up a demand for specimen blooming plants and choice cut flowers, Lilies-of-the-Valley in particular. This, with La France Roses, is ordered extensively for ornamental curtains. The steamer trade is just opening, and this will also help to make business brisk.

Philadelphia, *April 6th.*

Flowers and flowering plants were in greater demand than usual at Easter. *Lilium Harrisii* and *L. longiflorum* were in fine condition, averaging more flowers to the plant than have been seen here before, at prices ranging from 30 cts. to 50 cts. each. None of the leading florists had trouble in disposing of their stock at the highest figures. *Hydrangea Otaksa* and Thomas Hogg were very plentiful; the latter variety, which is a white one, seemed to sell the most readily. Plants growing in 6 and 8-inch pots, with from four to eight well-developed heads, sold at from $1 to $5 each. Hybrid Remontant Roses in pots would have been more plentiful but for the dull weather in the early part of the preceding week. Most of them were growing in 6-inch pots and sold at from $1 to $1.50 each. Fine Azalea plants, half standards, sold at from $2 to $10 each, and very large ones were in demand at as high as $20 for special occasions. The customers at this great floral festival have very little choice, as the demand is so great that they must take what they can get. Six-inch pots full of Daffodil Van Thol were plentiful and in demand at from 50 cts. to $1 each. *Gardenia florida* (Cape Jessamine) as a pot plant was a novelty here. That is to say, it was scarce and had not been seen on these occasions for some years past. The price varied from $5 to $7.50 each. Most of them were growing in eight-inch pots and were from three to four feet high. Hybrids were from $4 to $6 per dozen, excepting some special sorts like Madame Gabriel Luizet, which reached the highest figure at $7.50 per dozen. Jacqueminots were in as great demand as usual at from $3 to $5 per dozen. There is a falling off in the demand for designs. Churches were profusely decorated, but without novel features. There is very little leisure for a study of novelties in decorations at this busy season. Some few Genistas in pots, both large and small, proved useful for decorating and sold readily. Tulips, Lilies-of-the-Valley, Daffodils, Freesias and all varieties of Roses, were abundant, and sold at very good, though not exorbitant, prices.

Boston, *April 6th.*

Easter Sunday and the two preceding days were perfect spring days, and in the bright weather the flower trade was unusually brisk. Never before were so many flowers sold in Boston for Easter. There was no scarcity, however, and prices were therefore reasonable. The White Lily was the single exception, being in short supply, and late comers were obliged to accept substitutes. After the Easter rush there has followed a lull, but many fashionable weddings and other social occasions are in prospect, and all signs point to a large consumption of flowers this Spring. Roses are still abundant and of superb quality. Jacqueminots and Hybrids of enormous size, and with stems two feet or more in length, are to be seen in all the fashionable florists' windows. These bring from $4 to $8 per dozen. The longest stemmed flowers always bring the highest price. Mermets, Marechal Neils, Bennetts and Perles are abundant, and are offered as low as $1 to $1.50 per dozen. There are a few Lillies at about one-half of the Easter prices. Smilax is very scarce, and the little that is offered is poor in quality. Long-stemmed Carnations are 50 cts. to 75 cts. per dozen. Violets and Pansies, $1.50 per hundred. For mixed collections of cut flowers there is a great variety of bright and fragrant blooms, such as Lilies-of-the-Valley, Tulips, Daffodils, Mignonette, Forget-me-not, Heather, Heliotrope, Marguerites, etc., with fine Maiden Hair Ferns and Asparagus for green. A bunch of "Pussy Willow" laid on a box of selected flowers gives a pretty finish.